# PowerEdge T20

## Technical Guide

Quiet and compact, the PowerEdge T20 server is ideal for small and home offices looking to improve productivity and efficiency.

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# 1 System overview

The PowerEdge T20 mini-tower server packs large internal storage capacity and capable performance into a compact, quiet chassis that delivers efficient, worry-free operation. It is an ideal first server for small offices and home offices (SOHO), and excels at storing and sharing, collaboration and productivity, and data protection. With support for up to six internal hard drives, the T20 enables users to simplify their office IT by consolidating business information, images and videos onto a single server, where it can be more easily shared and protected. Powerful Intel® Xeon® or Pentium® multi-core processors drive applications and media faster, for quicker response times and crisp video performance. The T20's numerous USB ports permit the easy and flexible attachment of external devices, and its small form factor and deskside acoustics allow it to be installed anywhere.

## New technologies

Table 1 details new technologies featured on the PowerEdge T20 server.

**Table 1. New technologies**

| New technologies | Detailed descriptions |
|---|---|
| **Intel Xeon processor E3-1200 v3 product family and Intel Pentium processors** | The Intel Xeon processor E3-1200 v3 product family has advanced features that deliver exceptional performance and value. See the Processor section for a full list of processor options. |
| **Intel C226 series chipset** | The PowerEdge T20 server uses the Intel Platform Controller Hub (PCH) chip. See the Chipset section for details. |
| **1600MT/s DDR3 ECC memory** | The PowerEdge T20 offers up to 32GB (4 DIMM slots) 2GB/4GB/8GB, 1600MT/s unbuffered ECC memory. See the Memory section for details. |
| **Integrated NIC** | The PowerEdge T20 features Intel Ethernet Connection I217 10/100/1000. See the Networking and PCIe section for details. |
| **RAID controller** | Intel Rapid Storage Controller software RAID is integrated on the PowerEdge T20 with hardware RAID available with an optional storage controller card. Visit the Storage controllers section for details. |

## Comparison of selected PowerEdge one-socket tower servers

The PowerEdge T20 builds on the features of the PowerEdge T110 II to offer outstanding performance and value for your small office or home office.

Table 2 offers a comparison of the two systems. For the latest information on supported features, visit Dell.com/PowerEdge.

**Table 2. Comparing the PowerEdge T110 II to PowerEdge T20**

| Feature | PowerEdge T110 II | PowerEdge T20 |
|---|---|---|
| **Chassis** | 1U tower | 1U mini-tower |
| **Processors** | Intel Xeon processor E3-1200 product family | Intel Xeon processor E3-1200 v3 product family, Intel Pentium processors |
| **Front side bus (FSB)** | DMI II (Direct Media Interface) | Intel Direct Media Interface |
| **Memory** | Up to 32GB (4 DIMMs): 1GB/2GB/4GB/8GB DDR3 up to 1600MT/s | Up to 32GB (4 UDIMM) 2GB/4GB/8GB unbuffered 1600MT/s ECC |
| **Hard drive bays** | Up to 4 3.5" SATA/SAS (cabled) hard drives or 6 x 2.5" | Up to 6 internal (cabled) hard drives total:<br>• Up to four 3.5" SATA hard drives, plus<br>• Up to two 2.5" SATA hard drives (require expansion kits) with optional controller card |
| **SATA ports/speed (on-board)** | 5 ports; 5x3Gbps | 4 ports; 2x6Gbps; 2x3Gbps |
| **PCIe and PCI slots** | 1x16 (x8, 3.0)<br>1x8 (x8, 3.0)<br>1x8 (x4, 2.0)<br>1x4 (x1, 2.0) | 1x16 (x16, PCIe 3.0)<br>1x16 (x4, PCIe 2.0)<br>1x1 (x1, PCIe 2.0)<br>1 PCI slot |
| **USB** | 2 (front), 4 (rear) 2.0 | 2 (front), 4 (rear) 2.0<br>2 (front), 2 (rear) 3.0 |
| **Internal USB** | 2 (type-A adapter) | 2 (10-pin) |
| **LAN on motherboard (LOM)** | 1 port | 1 port |
| **Power supplies** | 305W 80+ | 290W |
| **Systems management** | Basic management | Intel Active Management Technology (AMT) 9.0 (with Intel Xeon processors) |
| **Software RAID** | PERC S100 | Intel Rapid Storage Controller 12.0 |

## PowerEdge T20 base fixed configurations

The PowerEdge T20 offers three fixed configurations with options that enable you to tailor your T20 to best suit your needs. Contact your Dell service representative to:

- Install additional memory and hard drives.

- Add an operating system or application software.
- Add external devices, such as laptops, desktop PCs, printers and projectors.
- Add deployment services to get you up and running.
- Get support services to keep you running smoothly over time.

Table 3 outlines the three base fixed configurations on the T20 as well as additional options.

**Table 3. PowerEdge T20 configuration options**

| Configuration | Description |
|---|---|
| **1** | • 1x Pentium processor<br>• 1x 4GB DIMM<br>• No hard drive<br>• No optical drive |
| **2** | • 1x Pentium processor<br>• 1x 4GB DIMM<br>• 1x 500GB hard drive<br>• No optical drive |
| **3** | • 1x CPU Xeon<br>• 1x 4GB DIMM<br>• 1x 1TB hard drive<br>• No optical drive |
| **Options** | • 2nd – 4th DIMM<br>• 2nd – 6th hard drive<br>• Optical drive (DVD)<br>• Operating system |

## Specifications

Table 4 lists the technical specifications for the PowerEdge T20. For the latest information on supported features, visit Dell.com/PowerEdge.

**Table 4. Technical specifications**

| Feature | PowerEdge T20 technical specification |
|---|---|
| **Form factor** | Mini tower (14.17"h x 6.89"w x 17.12"l) |
| **Processors** | Intel® Xeon® processor E3-1200 v3 product family<br>Intel Pentium® processors |
| **Processor sockets** | 1 socket |

| Feature | PowerEdge T20 technical specification | |
|---|---|---|
| **Front side bus or HyperTransport** | Intel Direct Media Interface | |
| **Cache** | 3M for dual-core<br>8M for quad-core | |
| **Chipset** | Intel C226 | |
| **Memory**[1] | Up to 32GB (4 DIMM slots)<br>2GB/4GB/8GB 1600MT/s unbuffered with ECC only | |
| **Memory speed** | 1333, 1600MT/s | |
| **Min/Max RAM** | 2GB/32GB | |
| **I/O slots** | **3 PCIe slots:**<br>• 1 x16 slot (3.0)<br>• 1 x16 slot (2.0)<br>• 1 x1 slot (2.0)<br>**1 PCI slot** | |
| **RAID controller** | Intel Rapid Storage Controller 12.0 supporting:<br>• SATA 6Gbps (2 ports: SATA0, SATA1)<br>• SATA 3Gbps (2 ports+ SATA2, SATA3)<br>• 4 SATA connectors support optional additional hard drives and optical drives | |
| **Drive bays** | Up to 6 internal (cabled) hard drives in total:<br>• Up to 4 3.5" SATA hard drives, plus<br>• Up to 2 2.5" SATA hard drives (require expansion kits) with optional controller card | |
| **Maximum internal storage** | 13TB (4x 3.5" 3TB; 2x 2.5" 500G) | |
| **Hard drives**[1] | **3.5" Client SATA** (7.2K RPM): 500GB and 1TB<br>**3.5" Enterprise** SATA (7.2K RPM): 2TB and 3TB | **2.5" SATA**<br>2.5" (10K RPM) 250G and 500G<br>2.5" SATA SSD: 2.5", 6Gb, 160G |
| **Integrated LOM/NIC** | Integrated Intel I217 Gigabit Ethernet LAN 10/100/1000 | |
| **Power supply** | Cabled 290W auto-sensing | |
| **USB** | 2 (front), 4 (rear) 2.0<br>2 (front), 2 (rear) 3.0 | |
| **Availability** | Error Correction Code (ECC) memory; software RAID | |

| Feature | PowerEdge T20 technical specification |
|---|---|
| **Optical drive** | 5.25" slim optical drive slot |
| **Video** | Integrated Intel HD Graphics P4600 with 2x DP + 1x VGA*<br>Integrated Intel HD Graphics 4600 with 2x DP + 1x VGA * |
| **Systems management** | Intel AMT 9.0 (with Xeon processor only) |
| **Operating system** | Microsoft® Windows Server® 2012 |

*Integrated graphic varies, depending on CPU offerings.

# 2 Chassis views and features

The Dell PowerEdge T20 is a one-socket tower server. For additional system views and features, see the *Dell PowerEdge T20 Systems Owner's Manual* on Dell.com/Support/Manuals.

## Chassis views

This chassis should be supported in the configurations detailed in Table 5.

**Table 5. Chassis configurations**

| Number of drive bays | Drive types | Controller | Front control panel | Power supply | Rack option |
|---|---|---|---|---|---|
| **4 cabled drive bays** | 3.5" SATA or 2x 2.5" + 4x 3.5" cabled hard drives | Intel Rapid Storage Controller 12.0 | LED | Cabled 350W | No |

Figure 1 shows the features on the front of the T20 chassis with the USB connectors and other components and features described in this guide.

**Figure 1. Front panel view and features**

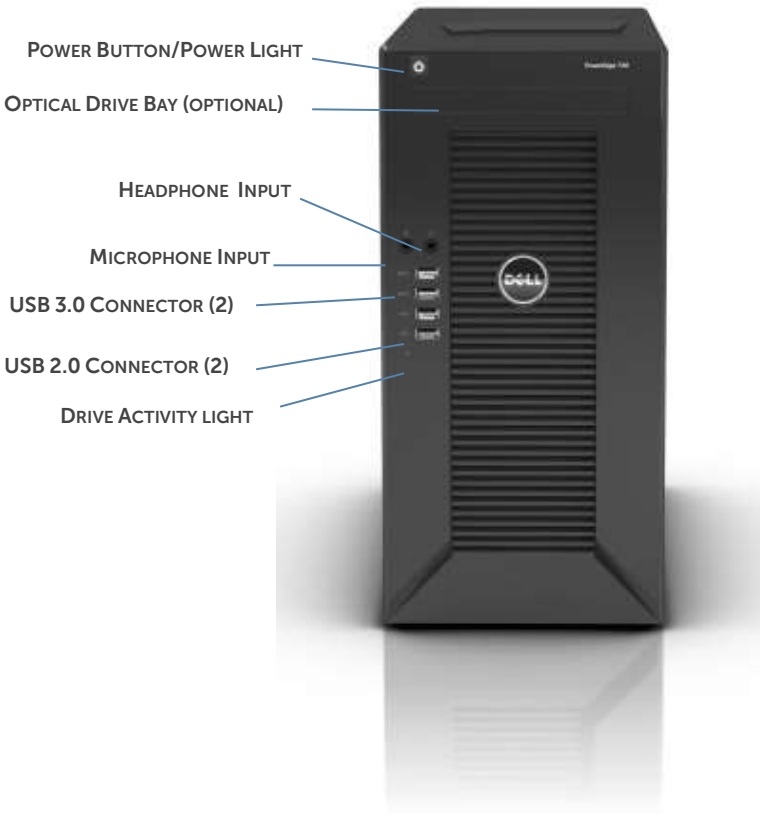
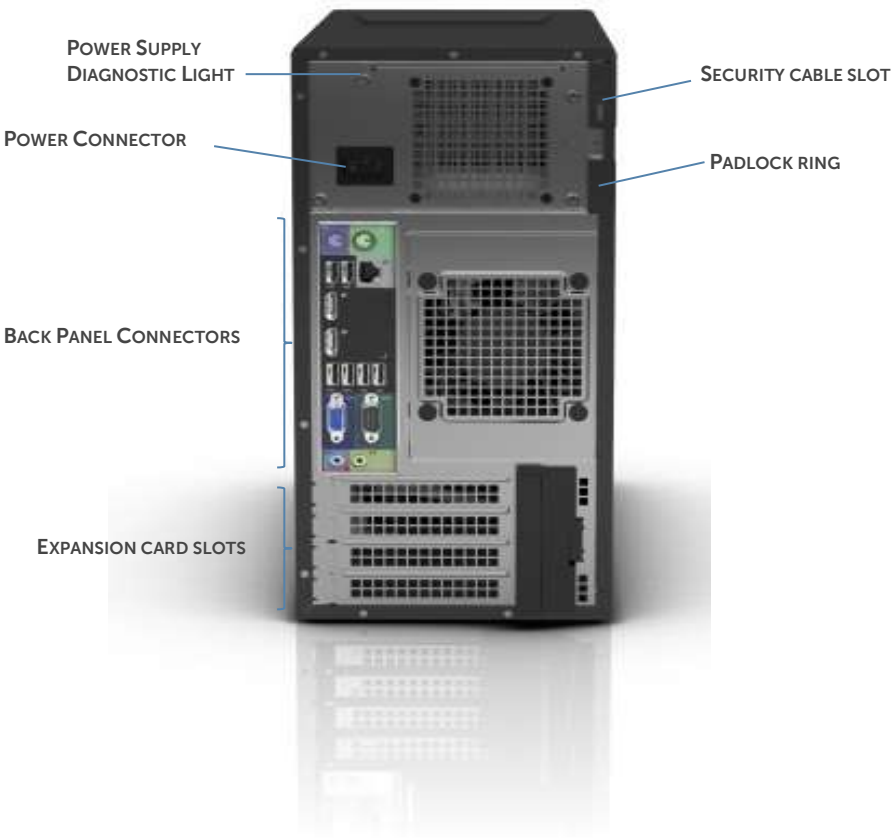


Figure 2 shows the features on the back of the T20 chassis with components and features described in this guide.

**Figure 2. Back panel view and features**




## Chassis features

Table 6 lists the PowerEdge T20's many chassis features. For additional information, see the *Dell PowerEdge T20 Systems Owner's Manual* on Dell.com/Support/Manuals.

**Table 6. Chassis features**

| Feature | Description |
|---|---|
| **Power button** | ACPI-compliant power button with an integrated green power LED |
| **Front bezel** | Covers the server's front-loading hard drives and locks for security |
| **NMI button** | Used to troubleshoot software and device driver errors; use only if directed by qualified support personnel or by the operating system's documentation |
| **System identification button** | Buttons on the back and front of a system to help identify the unit in a data center environment |

| Feature | Description |
|---|---|
| **Hard drives** | Up to 4x 3.5" SATA hard drives, plus<br>Up to 2x 2.5" SATA hard drives (require expansion kits) with optional controller card |
| **USB connectors** | Connects USB devices to the server |
| **Information tag** | Slide-out label panel for recording system information |
| **Video connector** | Connects a monitor to the server; 1 port on the back of the tower chassis or a port on both the front and back of the rack chassis |
| **LCD panel and buttons** | Displays system ID, status information and system error messages; 2 navigation buttons on the hot-plug chassis to scroll through the menu on the LCD and 1 select button |
| **Optical drive (optional)** | Optional half-height DVD or DVD+RW drive |
| **Power supply units** | Supplies power to the server |
| **Power supply indicators** | Indicates whether server has power |
| **NIC indicators** | Indicates network activity and status |
| **PCIe slots** | Connects PCIe expansion cards to the server |
| **Ethernet connectors** | Connects integrated 10/100/1000 NICs to the server |
| **Serial connector** | Connects a serial device to the server |

## Quick Resource Locator

Dell PowerEdge 12th generation servers feature a Quick Resource Locator (QRL) — a model-specific Quick Response (QR) code that is located inside the T20 chassis cover (see Figure 3). Use your smartphone to access the Dell QRL app to learn more about the server.

**Figure 3. QRL location**

This QRL code allows you to:

- View step-by-step videos, including overviews of system internals and externals, as well as detailed, concise, task-oriented videos and installation wizards.
- Locate reference materials, including searchable owner's manual content, LCD diagnostics and an electrical overview.
- Look up your service tag so you can quickly gain access to your specific hardware configuration info and warranty information.
- Contact Dell directly (by link) to get in touch with technical support and sales teams and provide feedback to Dell.

These codes provide an easy way to retrieve the critical support information you need when you need it, making you more efficient and effective in managing your hardware.

## Security features

The latest generation of PowerEdge servers has the features listed in Table 7 to help ensure the security of your data center.

**Table 7. Security features**

| Security feature | Description |
|---|---|
| **Cover latch** | A tooled latch is integrated in the top cover to secure it to the rack chassis. |
| **Front bezel** | A metal bezel is mounted to the chassis front to provide the Dell ID. A lock on the bezel is used to protect un-authorized access to hard drives. System status is viewable on the LCD or LED panel when the bezel is installed. |
| **TPM** | The Trusted Platform Module (TPM) is used to generate/store keys, protect/authenticate passwords and create/store digital certificates. It also supports the Intel Xeon TXT functionality. TPM can also be used to enable the BitLocker™ hard drive encryption feature in Windows Server 2008. TPM 1.2 is supported. No TPM version is available for China or Russia. |
| **Power-off security** | BIOS has the ability to disable the power button function. |
| **Intrusion alert** | An internal switch is used to detect chassis intrusion. |
| **Secure mode** | BIOS has the ability to enter a secure boot mode through system setup. This mode includes the option to lock out the power and NMI switches on the control panel or set up a system password. |

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# 3 Processor

The Dell PowerEdge T20 offers Intel Pentium processors and the next-generation Intel Xeon processor E3-1200 v3 product family, which features enhanced media, graphics capabilities, flexibility and enhanced security. Manufactured on industry-leading 22 nm process technology with 3D Tri-Gate transistors, the Intel Xeon processor E3-1200 v3 family offers numerous advancements over the Intel Xeon processor E3-1200 v2 family.

## Processor features

The Intel Xeon processor E3-1200 v3 product family features include:

- Enhanced energy efficiency and performance
- Support for ECC memory for better data integrity, reliability and system uptime
- High-end media and graphics capabilities for devices that display videos, 2D and 3D graphics and interactive content
- Intel Turbo Boost Technology 2.0 to accelerate processor and graphics performance for peak loads
- Intel Hyper-Threading Technology for faster performance for demanding business applications
- Continued improvements to both Intel TXT and AES-NI help to better protect systems and data

## Supported processors

Table 8 lists the Intel processors supported by the PowerEdge T20. For the latest information on supported processors, visit Dell.com/PowerEdge.

**Table 8. Supported processors**

| Model | Speed | TDP | Cache | Cores/ threads | Max memory speed | Turbo |
|---|---|---|---|---|---|---|
| **Xeon E3-1225 v3** | 3.2GHz | 84W | 8MB | 4/8 | 1600MT/s | Yes |
| **Pentium G3220** | 3.0GHz | 54W | 3MB | 2/2 | 1333MT/s | MP |

For more information supported Intel processors, visit Intel.com. For information on processor installation and configuration, see the *Dell PowerEdge T20 Systems Owner's Manual* on Dell.com/Support/Manuals.

## Chipset

The Intel C226 chipset is implemented on the Dell PowerEdge T20. For more information, visit Intel.com.

# 4 Memory

More options are available for the Dell PowerEdge 12th generation servers than in previous generations — more capacity choices and more frequency choices. The PowerEdge T20 supports up to 32GB of memory with speeds of up to 1600MT/s, providing high performance in a variety of applications.

## Supported memory

The T20 supports memory speeds of 1600MT/s and 1333MT/s, depending on the DIMM types installed and the configuration. All memory on all processors and channels runs at the same speed and voltage. By default, the system runs at the highest speed for the channel with the lowest DIMM voltage and speed.

The T20 supports the DIMMs listed in Table 9. For the latest information on supported memory, visit Dell.com/PowerEdge.

**Table 9. DIMMs supported**

| Capacity | Speed | Type | Ranks per DIMM |
|---|---|---|---|
| 4GB | 1333/1600MT/s | UDIMM | 1 |
| 4GB | 1333/1600MT/s | UDIMM | 1 |
| 4GB | 1333/1600MT/s | UDIMM | 2 |
| 8GB | 1333/1600MT/s | UDIMM | 2 |
| 8GB | 1333/1600MT/s | UDIMM | 1 |
| 8GB | 1333/1600MT/s | UDIMM | 2 |
| 16GB | 1333/1600MT/s | UDIMM | 2 |
| 16GB | 1333/1600MT/s | UDIMM | 2 |
| 32GB | 1333/1600MT/s | UDIMM | 2 |

# 5 Storage

The Dell PowerEdge T20 supports up to four 3.5-inch hard drives and up to two 2.5-inch hard drives.

- 4x 3.5-inch cabled drive bays from motherboard SATA connector
- 3x 3.5-inch cabled SATA, plus SATA optical disk drive device from motherboard SATA connector
- 2x 2.5-inch cabled SATA via add-on storage controller, plus 4x 3.5-inch cabled SATA from motherboard SATA connector

## Supported hard drives

Table 10 lists the PowerEdge T20 hard drive options. For additional information, see Dell.com/PowerEdge.

**Table 10. Supported hard drives**

| Form factor | Type | Speed (rpm) | Capacities |
|---|---|---|---|
| 2.5" | SATA | 10K | 250GB, 500GB |
| | SATA SSD | 6Gb | 160GB |
| 3.5" | SATA | 7.2K | 500GB, 1TB |
| | Enterprise | 7.2K | 2TB, 3TB |

## Storage controllers

The PowerEdge T20 supports Intel Rapid Storage Controller 12.0 software RAID and hardware RAID from the optional storage controller card available at Dell.com.

StarTech Part #: PEXSAT32
Dell Part#: A4046565

The **PEXSAT32 2-Port PCIe SATA 6GB controller card** offers simple connectivity between a host computer and SATA 3.0 devices — a cost-effective solution for connecting high-speed storage, such as High RPM hard drives and solid state drives (SSD), which in turn allows for easier data backups and archiving.

**Note**: Additional SATA cables are required to connect the card with fourth and fifth hard drives and an additional power extension cable is required to connect the system power to these drives.

## Optical disk drive

The PowerEdge T20 supports one internal slim optical drive and is able to boot from any internal optical drive. Table 11 lists supported optical disk drive options.

**Table 11. Optical disk drive options**

| Optical disk drive | Supported |
|---|---|
| Slimline 6X Blu-ray Writer SATA 1.5Gbps | Yes |
| Slimline 8X DVD+/-RW[1] SATA 1.5Gbps | Yes |
| Slimline 8X DVD-ROM[2] SATA 1.5Gbps | Yes |

The PowerEdge T20 server supports “no optical drive” configurations, support for optional internal DVD-ROM (SATA) and support for optional internal DVD+RW (SATA).

**Note**: An additional power extension cable is required to connect the system power to fourth and fifth hard drives, and an optical disk drive.

# 6 Networking and PCIe

The Dell PowerEdge T20 offers balanced, scalable I/O capabilities, including integrated PCIe 2.0- and 3.0-capable expansion slots.

## Integrated NIC controller

The PowerEdge T20 has an integrated Intel Ethernet Connection I217 chip for performance-enhancing features:

- Cost-optimized single GbE (1GbE)
- Small 6x6 mm quad-flat, no-lead (QFN) package
- Intel power optimizer
- 500mW TDP with typical ~ 400mW GbE
- Energy-Efficient Ethernet (EEE)

Table 12 outlines additional specifications of the Intel Ethernet Connection I217.

**Table 12. Intel Ethernet Connection I217**

| | | |
|---|---|---|
| **Features** | External connector type | RJ45 |
| | Data rates supported | 10/100/1000Mbps |
| | Controller bus architecture | PCIe-based interface for S0 state, SMBus for Sx low power state |
| | Integrated memory | No |
| | Data transfer mode (example Bus-Master DMA) | No |
| | Power consumption (full operation per data rate connection speed) | 535mW (Maximum) |
| | Power consumption (standby operation) | 176mW (Maximum) |
| | IEEE standards compliance (example 802.1P) | 802.3 |
| | Boot ROM support | EEPROM (located in SPI) |
| | | |
| **Network transfer mode** | Network transfer rate<br>• 10BASE-T (full-duplex) 20Mbps<br>• 100BASE-TX (half-duplex) 100Mbps<br>• 100BASE-TX (full-duplex) 200Mbps<br>• 1000BASE-T (full-duplex) 2000Mbps | 10Mb (full/half-duplex)<br>100Mb (full/half-duplex)<br>1000Mb (full-duplex) |

| | | |
|---|---|---|
| **Environmental** | Operating temperature | 0° to 85°C (32° to 185°F) |
| | Operating humidity | 20% to 80% (non-condensing) |
| | Operating system driver support | Microsoft Windows 7 32/64, Microsoft Windows 8 32/64 |
| | Manageability | Wake On LAN (WOL)<br>Pre-boot eXecution Environment (PXE) 2.1 |
| | Management capabilities and alerting | Intel Standard Manageability<br>Intel Core 2 Duo/Quad Processor with vPro Technology |

## PCIe expansion

PCIe connectivity is integrated with the processor. The T20 supports up to four PCIe slots. PCI card dimensions are outlined in Table 13.

- 1x PCIe x16 slot 3.0
- 1x PCIe x16 (wired x4) slot 2.0
- 1x PCIe x1 slot 2.0
- 1x PCI 32/33 slot

**Table 13. PCI card dimensions**

| Type | Voltage supported | Max height | Max length | Max wattage | Cards supported |
|---|---|---|---|---|---|
| **PCIe x16 3.0** | 3.3V/12V | 4.38 in/11.13 cm full height | 6.6 in/16.77 cm half length | 75* | Graphics<br>Gigabit NIC<br>Parallel/Serial |
| **PCIe x1 2.0** | 3.3V/12V | 4.38 in/11.13 cm full height | 6.6 in/16.77 cm half length | 25 | Gigabit NIC<br>Parallel/Serial |
| **PCI** | 3.3V/5V/12V/-12V | 4.38 in/11.13 cm full height | 6.6 in/16.77 cm half length | 25 | 1394 |
| **PCIe x16 (x4) 2.0** | 3.3V/12V | 4.38 in/11.13 cm full height | 6.6 in/16.77 cm half length | 25* | Graphics,<br>Gigabit NIC<br>Parallel/Serial |

# 7 Power, thermal and acoustics

Lower overall system-level power draw is a result of breakthrough system design. The Dell PowerEdge T20 server maximizes performance per watt through a combination of power and cooling, energy-efficient technologies and tools. Additionally, the PowerEdge T20 has an extensive collection of sensors that automatically track thermal activity, which helps regulate temperature, thereby reducing server noise and power consumption.

## Power management

Table 14 summarizes power management features on the PowerEdge T20.

**Table 14. Power management features**

| Feature | Type | Enable/Status/Ctrl bit location | Description |
|---|---|---|---|
| **ACPI mode switch** | Fixed | PCH | The operating system uses the SCI_EN bit in PCH to switch from legacy mode to ACPI mode. |
| **Sleep states** | Fixed | PCH | Supported states: S0 (Working), S4-OS ('Hibernation'), and S5 (Soft-off).<br>S1 (also called 'standby' or 'suspend') and S3 are not supported. |
| **Power button** | Fixed | PCH | In ACPI mode, the operating system has control of the power button. In non-ACPI mode, SMI handler owns power button events. |
| **Real-time clock (RTC)** | Fixed | PCH | The operating system is able to configure the system to wake on the RTC alarm. |
| **Power management timer** | Fixed | PCH | PCH 32-bit power management timer is used. |
| **Power management event (PME)** | Generic | PCH | When a device signals PME, the system wakes (if necessary), the OS detects the event, and a Dell-defined ASL routine handles the event. Wake-on-LAN is one example of a PME. |
| **DBS** | N/A | Processor MSRs | This feature does P state transition under Windows. |
| **C state support** | N/A | Processor and PCH registers | This feature allows multiple C state support for the processor. This feature will work under Windows and ACPI OS that understand C states. |

## Power supply unit

The PowerEdge T20 includes a single 290W cabled auto-sensing power supply that provides power to the T20 planar, the four internal hard drive bays and the two 2.5" internal drive bays. Table 15 details power supply specifications.

**Table 15. Power supply specifications**

| Specification | 290W AC |
|---|---|
| **Current consumption** | 10–5A |
| **Supply voltage** | 100–240V AC[1] |
| **Frequency** | 50/60Hz |
| **Heat dissipation (BTU/hr max.)** | 989 |

## Thermal and acoustics

Optimized thermal management makes the PowerEdge T20 cool and quiet. Benefiting from a smart cooling thermal control algorithm, the T20 offers both high performance and quiet acoustics across a wide range of ambient temperatures (5°C ~ 35°C). Though the fan-induced sound is inevitable for cooling purposes, it is controlled to be smooth and quiet. In a typical office environment (~45dBA), the sound is almost unnoticeable.

# 8 Operating systems and virtualization

The Dell PowerEdge T20 supports a wide range of industry-standard operating systems and virtualization software.

## Supported operating systems

Primary operating systems supported the primary operating systems supported on the PowerEdge T20. For the latest information on supported operating systems, see Dell.com/OSsupport.

**Table 16. Primary operating systems supported**

| Operating system | Platform | Edition |
|---|---|---|
| **Microsoft Windows Server 2012** | X64 | Foundation<br>Essentials<br>Standard |

## Supported virtualization

Table 17 highlights the virtualization support for the T20.

**Table 17. Virtualization support**

| Operating systems | Factory options | Internal dual SD module install support |
|---|---|---|
| **Red Hat Enterprise Virtualization 6.5** | DIB | Yes |

DIB = drop-in-box

# 9 Systems management

The PowerEdge T20 offers Intel Active Management Technology (AMT). Intel Xeon platforms equipped with Intel AMT can be managed remotely, regardless of whether they are powered up or have a functioning operating system.

Intel AMT Manageability Server 9.0 features include:

- Intel Intelligent Power Node Manager
- Power Management service assisting BMC
- Boot control
- Power state management
- Hardware/software inventory
- Hardware alerting
- Audit logs
- Microsoft Network Access Protection (NAP)
- Fast-call for help; remote schedule maintenance
- Measured AMT
- KVM remote control and re-direction/enhancements
- PC alarm clock
- Firmware upgrade/downgrade
- Host-based setup and configuration
- AMT graceful shutdown

## Server and embedded server management

The Dell PowerEdge T20 is Intelligent Platform Management Interface (IPMI) v2.0 compliant.

# Appendix A. Additional specifications

## System dimensions and weight

Table 18 details the dimensions and weight of the Dell PowerEdge T20.

**Table 18. PowerEdge T20 dimensions and weight**

| PowerEdge T20 | |
|---|---|
| **Height** | 14.17 in/36 cm |
| **Width** | 6.89 in/17.5 cm |
| **Depth** | 17.12 in/43.5 cm |
| **Weight** | 18.72 lbs/8.49 kg |

## Environmental specifications

Table 19 offers environmental specifications of the Dell PowerEdge T20.

**Table 19. Environmental specifications**

| **Temperature** | |
|---|---|
| Operating | 5° to 35°C (41° to 95°F) |
| Non-operating (Storage) | –40° to 65°C (–40° to 149°F) |
| Relative humidity | 20% to 80% (non-condensing) |
| **Maximum vibration** | |
| Operating | 0.26Grms random at 5 to 350Hz |
| Non-operating | 2.2Grms random at 5 to 500Hz |
| **Maximum shock** | |
| Operating | Bottom half-sine pulse with a change in velocity of 50.8 cm/sec (20 inches/sec) |
| Non-operating | 105G half-sine pulse with a change in velocity of 133 cm/sec (52.5inches/sec) |
| **Maximum altitude** | |
| Operating | –15.2 to 3048 m (–50 to 10,000 ft) |
| Non-operating | –15.2 to 10,668 m (–50 to 35,000 ft) |

## Video specifications

Video specifications of the Dell PowerEdge T20 are detailed in Table 20.

**Table 20. Video specifications**

| Graphic/Video options | |
|---|---|
| Integrated Intel HD Graphics P4000 with 2x DP + 1x VGA | X |
| Integrated Intel HD Graphics 4000 with 2x DP + 1x VGA | X |

## USB peripherals

USB peripherals are supported through the front and back USB ports on the T20. These ports are USB 3.0 compliant.

# Appendix B. Standards compliance

The PowerEdge T20 system conforms to the industry standards in Table 21.

**Table 21. Industry standard documents**

| Standard | URL for information and specifications |
|---|---|
| **ACPI**<br>Advance Configuration and Power Interface Specification, v2.0c | acpi.info |
| **Ethernet**<br>IEEE 802.3-2005 | standards.ieee.org/getieee802/802.3.html |
| **HDG**<br>Hardware Design Guide Version 3.0 for Microsoft Windows Server | microsoft.com/whdc/system/platform/pcdesign/desguide/serverdg.mspx |
| **IPMI**<br>Intelligent Platform Management Interface, v2.0 | intel.com/design/servers/ipmi |
| **DDR3 Memory**<br>DDR3 SDRAM Specification, Rev. 3A | jedec.org/download/search/JESD79-3C.pdf |
| **LPC**<br>Low Pin Count Interface Specification, Rev. 1.1 | developer.intel.com/design/chipsets/industry/lpc.htm |
| **PCI Express**<br>PCI Express Base Specification Rev. 2.0 and 3.0 | pcisig.com/specifications/pciexpress |
| **PMBus**<br>Power System Management Protocol Specification, v1.2 | pmbus.info/specs.html |
| **SAS**<br>Serial Attached SCSI, v1.1 | www.t10.org |
| **SATA**<br>Serial ATA Rev. 2.6; SATA II, SATA 1.0a Extensions, Rev. 1.2 | sata-io.org |
| **SMBIOS**<br>System Management BIOS Reference Specification, v2.7 | dmtf.org/standards/smbios |
| **TPM**<br>Trusted Platform Module Specification, v1.2 | trustedcomputinggroup.org |

| | |
|---|---|
| **UEFI**<br>Unified Extensible Firmware Interface Specification, v2.1 | uefi.org/specs |
| **USB**<br>Universal Serial Bus Specification, Rev. 2.0 | usb.org/developers/docs |
| **Windows Logo**<br>Windows Logo Program System and Device Requirements, v3.10 | microsoft.com/whdc/winlogo/hwrequirements.mspx |

# Appendix C. Additional resources

Table 22 provides a list of documents and websites that provide for more information on the Dell PowerEdge T20.

**Table 22. Additional resources**

| Resource | Description of contents | Location |
|---|---|---|
| **Dell PowerEdge T20 Owner's Manual** | This manual, available in PDF format, provides the following information:<br>• Chassis features<br>• System setup program<br>• System messages<br>• System codes and indicators<br>• System BIOS<br>• Remove and replace procedures<br>• Troubleshooting<br>• Diagnostics<br>• Jumpers and connectors | Dell.com/Support/Manuals |
| **Dell PowerEdge T20 Getting Started Guide** | This guide is printed and shipped with the system, and is also available in PDF format on the Dell support site. This guide provides information on the following:<br>• Initial setup steps<br>• Key system features<br>• Technical specifications | Dell.com/Support/Manuals |
| **Cable Management Arm Installation** | This printed document is provided with the CMA kits. The document provides the instructions for installing the cable management arm on the rails. | Dell.com/Support/Manuals |
| **Information Update** | This document is printed and shipped with the system, and is also available in PDF format on the Dell support site. This document provides information on system updates. | Dell.com/Support/Manuals |
| **System Information Label** | The system information label documents the system board layout and system jumper settings. Text is minimized due to space limitations and translation considerations. The label size is standardized across platforms. | Inside the system chassis cover |
| **Quick Resource Locator (QRL)** | This code on the chassis can be scanned by a phone application to access additional information and resources for the server, including videos, reference materials, service tag information and Dell contact information. | Inside the system chassis cover |
| **Power and cooling** | Provides details for improving energy efficiency in the data center. | Dell.com/PNC |
| **Operating system matrix for Dell PowerEdge** | Provides updated information on which operating systems are available on which PowerEdge systems. | Dell.com/OSsupport |

| Resource | Description of contents | Location |
|---|---|---|
| **systems** | | |
| **Processor and chipset** | Provides more information about the Intel processors and chipset. | Intel.com |
| **Power distribution unit (PDU)** | Provides help selecting a rack-based power distribution unit. | DellPDU.com |
| **Uninterruptible power supply (UPS)** | Provides help selecting an uninterruptible power supply model. | DellUPS.com |
| **Volatility information** | Contact your Dell sales representative. | Dell.com/Support/Manuals |

# Appendix D. System board block diagram

Figure 4. PowerEdge T20 system board block diagram